

WHAT IS CLAIMED IS:

1. An exhaust system (1;41) comprising:
an exhaust passage (6) that allows exhaust gas discharged from an internal
5 combustion engine to pass therethrough;
a primary exhaust emission control unit (2) including a catalyst (27) to purify
the exhaust gas; and
a first exhaust heat collecting unit (28) including a thermoelectric element
(30) that converts thermal energy of the exhaust gas into electric energy,
10 characterized in that
the exhaust passage is divided into a first passage (25) provided with the
primary exhaust emission control unit (2) and a second passage (26) provided with
the first exhaust heat collecting device (28) including the thermoelectric element
(30); wherein
15 the exhaust system further comprising a control member (22j,22k,22m,22n)
that is operated to change a flow of the exhaust gas between the first passage (25) and
the second passage (26);
an operation of the control member (22j,22k,22m,22n) is controlled based on
a temperature in the primary exhaust emission control unit (2);
20 the control member (22j,22k,22m,22n) is operated such that the exhaust gas
flows through the second passage (26) when the temperature in the primary exhaust
emission control unit (2) exceeds a predetermined temperature; and
the predetermined temperature is determined based on an activation
temperature range of the catalyst (27) in the primary exhaust emission control unit
25 (2).
2. The exhaust system according to claim 1, further comprising a secondary
exhaust emission control unit (3) provided on the exhaust passage (6) where the first
passage and the second passage are joined.
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3. The exhaust system according to claim 2, wherein an operation of the control
member (22j, 22k, 22m, 22n) is controlled based on a temperature in the secondary
exhaust emission control unit (3).
- 35 4. The exhaust system according to claim 3, wherein the control member (22j,
22k, 22m, 22n) is operated such that the exhaust gas flows through the second
passage (26) the temperature in the secondary exhaust emission control unit (3)
exceeds a predetermined temperature.

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5. The exhaust system according to claim 4, wherein the predetermined temperature is determined based on an activation temperature range of the catalyst in the secondary exhaust emission control unit.
- 5 6. The exhaust system according to claim 2, further comprising a second exhaust heat collecting unit (42) including a thermoelectric element downstream of the secondary exhaust emission control unit (3).
7. The exhaust system according to claim 1 or 2, wherein:
10 the first passage (25) and the second passage (26) are combined into a single structure;
the first passage (25) is provided in a center of the structure; and
the second passage (26) is provided on an outer periphery of the first passage (25).
- 15 8. The exhaust system according to claim 1 or 2, wherein:
the second passage (26) includes a heat exchange member that transfers heat of the exhaust gas to the exhaust heat collecting device; and
the exhaust heat collecting device is provided with a catalyst for purifying the
20 exhaust gas.
9. The exhaust system according to claim 8, wherein the catalyst (27) is carried on the heat exchange member (29).
- 25 10. The exhaust system according to claim 7, wherein the structure in which the first passage (25) and the second passage (26) are combined is placed in the vicinity of an exhaust manifold (EM) in the internal combustion engine.
11. The exhaust system according to any one of claims 1 to 4, wherein the control
30 member (22j, 22k, 22m, 22n) serves to change each flow rate of the exhaust gas flowing into the first passage (25) and the second passage (26).
12. The exhaust system according to claim 11; wherein the control member comprises (22j, 22k, 22m, 22n) a valve (22m) that is operated to close and open one
35 of the first passage (25) and the second passage (26) at a predetermined degree.

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